Amendments to the Claims are reflected in the listing of claims which begin on page 3 of this paper.

Amendments to the Claims

This listing of claims will replace all prior listings, of claims in the application:

1. (previously presented) Functionalized zirconium oxide particles comprising:

surfaces comprising a total quantity of hydroxyl groups comprising a complexed fraction of hydroxyl groups comprising a reactive portion of hydroxyl groups and a less reactive portion of hydroxyl groups;

said reactive portion of hydroxyl groups being complexed with functionalities selected from the group consisting of functionalities with high steric hindrance, functionalities with low steric hindrance, and a combination thereof;

said less reactive portion of hydroxyl groups being complexed with said groups having a low steric hindrance.

2. (previously presented.) The functionalized zirconium oxide particles of claim 1 wherein said functionalities having a low steric hindrance comprise mobile adhesion promoters and said functionalities having a high steric hindrance comprise organofunctional coupling agents.

3. (previously presented) The functionalized zirconium oxide particles of claim 1 wherein said complexed fraction of hydroxyl groups is effective to produce a coagulation point of about 1 minute or more.

4. (previously presented)The functionalized zirconium oxide particles of claim 1 wherein said complexed fraction of hydroxyl groups is effective to produce a coagulation point of about 1 hour or more.

5. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein said complexed fraction of hydroxyl groups is effective to produce a coagulation point of about 1 minute or more.

6. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein said complexed fraction of hydroxyl groups is effective to produce a coagulation point of about 1 hour or more.

7. (previously presented) The functionalized zirconium oxide particles of claim 1 wherein said complexed fraction of hydroxyl groups is about 50% or more of said total quantity of hydroxyl groups.

8. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein said organofunctional coupling agents are irreversibly complexed with said reactive portion of hydroxyl groups.

9. (previously presented) The functionalized zirconium oxide particles of claim 1 wherein said complexed fraction of hydroxyl groups comprises substantially all of said total quantity of hydroxyl groups.

10. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein said complexed fraction of hydroxyl groups comprises substantially all of said total quantity of hydroxyl groups.

11. (previously presented) The functionalized zirconium oxide particles of claim 3 wherein said complexed fraction of hydroxyl groups comprises substantially all of said total quantity of hydroxyl groups.

12. (previously presented) The functionalized zirconium oxide particles of claim 4 wherein said complexed fraction of hydroxyl groups comprises substantially all of said total quantity of hydroxyl groups.

13. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein said complexed fraction of hydroxyl groups comprises substantially all of said total quantity of hydroxyl groups.

14. (previously presented) The functionalized zirconium oxide particles of claim 6 wherein said complexed fraction of hydroxyl groups comprises substantially all of said total quantity of hydroxyl groups.

15. (previously presented) Functionalized zirconium oxide particles comprising a surface comprising a total quantity of hydroxyl groups comprising a complexed fraction of hydroxyl groups and an uncomplexed fraction of hydroxyl groups, said complexed fraction of hydroxyl groups being effective to produce a coagulation point of about one minute or more after removal of a solvent from a mixture of said zirconium oxide particles and a matrix resin.

16. (previously presented) The functionalized zirconium oxide particles of claim 15 wherein said complexed fraction of hydroxyl groups is effective to produce a coagulation point of about one hour or more after removal of a solvent.

17. (previously presented) The functionalized zirconium oxide particles of claim 15 wherein said complexed portion of hydroxyl groups comprises a less reactive portion of hydroxyl groups complexed with a mobile adhesion promoter and a more reactive portion of hydroxyl groups complexed with an organofunctional coupling agent.

18. (previously presented) The functionalized zirconium oxide particles of claim 16 wherein said complexed portion of hydroxyl groups comprises a less reactive portion of hydroxyl groups complexed with a mobile adhesion promoter and a more reactive portion of hydroxyl groups complexed with an organofunctional coupling agent.

19. (previously presented) The functionalized zirconium oxide particles of claim 17 wherein the organofunctional coupling agent also comprises an adhesion promoter.

20. (previously presented) The functionalized zirconium oxide particles of claim 18 wherein the organofunctional coupling agent also comprises an adhesion promoter.

21-26. (Canceled)

27. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 3 further comprising an alloying element selected from the group consisting of aluminum, phosphorus, gallium, germanium, barium, strontium, yttrium, niobium, antimony, cesium, and combinations thereof.

28. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 4 further comprising an alloying element selected from the group consisting of aluminum, phosphorus, gallium, germanium, barium, strontium, yttrium, niobium, antimony, cesium, and combinations thereof.

29. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 1 further comprising an alloying element selected from the group consisting of aluminum, phosphorus, gallium, germanium, barium, strontium, yttrium, niobium, antimony, cesium, and combinations thereof.

30. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 22 further comprising an alloying element selected from the group consisting of aluminum, phosphorus, gallium, germanium, barium, strontium, yttrium, niobium, antimony, cesium, and combinations thereof.

31. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 17 further comprising an alloying element selected from the group consisting of aluminum, phosphorus, gallium, germanium, barium, strontium, yttrium, niobium, antimony, cesium, and combinations thereof.

32. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 18 further comprising an alloying element selected from the group consisting of aluminum, phosphorus, gallium, germanium, barium, strontium, yttrium, niobium, antimony, cesium, and combinations thereof.

33-38. (Canceled)

39. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 1 further comprising a mixture comprising a matrix resin comprising monomers comprising functional groups polymerizable with said organofunctional coupling agents.

40. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 2 further comprising a mixture comprising a matrix resin comprising monomers comprising functional groups polymerizable with said organofunctional coupling agents.

41. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 5 further comprising a mixture comprising a matrix resin comprising monomers comprising functional groups polymerizable with said organofunctional coupling agents.

42. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 6 further comprising a mixture comprising a matrix resin comprising monomers comprising functional groups polymerizable with said organofunctional coupling agents.

43. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 17 further comprising a mixture comprising a matrix resin comprising monomers comprising functional groups polymerizable with said organofunctional coupling agents.

44. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 18 further comprising a mixture comprising a matrix resin comprising monomers comprising functional groups polymerizable with said organofunctional coupling agents.

45. (previously presented) The functionalized zirconium oxide particles of claim 39 comprising an average diameter effective to permit curing of said mixture by photopolymerization.

46. (previously presented) The functionalized zirconium oxide particles of claim 40 comprising an average diameter effective to permit curing of said mixture by photopolymerization.

47. (previously presented) The functionalized zirconium oxide particles of claim 41 comprising an average diameter effective to permit curing of said mixture by photopolymerization.

48. (previously presented) The functionalized zirconium oxide particles of claim 42 comprising an average diameter effective to permit curing of said mixture by photopolymerization.

49. (previously presented) The functionalized zirconium oxide particles of claim 43 comprising an average diameter effective to permit curing of said mixture by photopolymerization.

50. (previously presented) The functionalized zirconium oxide particles of claim 44 comprising an average diameter effective to permit curing of said mixture by photopolymerization.

51. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein a sufficient quantity of said reactive portion of hydroxyl groups is complexed with an organofunctional coupling agent to provide fracture toughness of a cured composite comprising said functionalized zirconium oxide particles.

52. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein a sufficient quantity of said reactive portion of hydroxyl groups is complexed with said organofunctional coupling agent to provide fracture toughness of a cured composite comprising said functionalized zirconium oxide particles.

53. (previously presented) The functionalized zirconium oxide particles of claim 6 wherein a sufficient quantity of said reactive portion of hydroxyl groups is complexed with

said organofunctional coupling agent to provide fracture toughness of a cured composite comprising said functionalized zirconium oxide particles.

54. (previously presented) The functionalized zirconium oxide particles of claim 17 wherein a sufficient quantity of said reactive portion of hydroxyl groups is complexed with said organofunctional coupling agent to provide fracture toughness of a cured composite comprising said functionalized zirconium oxide particles.

55. (previously presented) The functionalized zirconium oxide particles of claim 18 wherein a sufficient quantity of said reactive portion of hydroxyl groups is complexed with said organofunctional coupling agent to provide fracture toughness of a cured composite comprising said functionalized zirconium oxide particles.

56. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein the organofunctional coupling agent comprises a polymerizable group selected from the group consisting of one or more vinyl groups, acryl groups, epoxy groups, and methacryl groups.

57. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein the organofunctional coupling agent comprises a polymerizable group selected from the group consisting of one or more vinyl groups, acryl groups, epoxy groups, and methacryl groups.

58. (previously presented) The functionalized zirconium oxide particles of claim 6 wherein the organofunctional coupling agent comprises a polymerizable group selected from the group consisting of one or more vinyl groups, acryl groups, epoxy groups, and methacryl groups.

59. (previously presented) The functionalized zirconium oxide particles of claim 17 wherein the organofunctional coupling agent comprises a polymerizable group selected from the group consisting of one or more vinyl groups, acryl groups, epoxy groups, and methacryl groups.

60. (previously presented) The functionalized zirconium oxide particles of claim 18 wherein the organofunctional coupling agent comprises a polymerizable group selected from the group consisting of one or more vinyl groups, acryl groups, epoxy groups, and methacryl groups.

61. (previously presented) The functionalized zirconium oxide particles of claim 56 wherein the organofunctional coupling agent comprises a functionality selected from the group consisting of mono-, di-, and tri-functional silanes, isocyanates, zirconates, aluminozirconates, zirconyl methacrylate, titanates, and phosphonates.

62. (previously presented) The functionalized zirconium oxide particles of claim 57 wherein the organofunctional coupling agent comprises a functionality selected from the group consisting of mono-, di-, and tri-functional silanes, isocyanates, zirconates, aluminozirconates, zirconyl methacrylate, titanates, and phosphonates.

63. (previously presented) The functionalized zirconium oxide particles of claim 58 wherein the organofunctional coupling agent comprises a functionality selected from the group consisting of mono-, di-, and tri-functional silanes, isocyanates, zirconates, aluminozirconates, zirconyl methacrylate, titanates, and phosphonates.

64. (previously presented) The functionalized zirconium oxide particles of claim 59 wherein the organofunctional coupling agent comprises a functionality selected from the

group consisting of mono-, di-, and tri-functional silanes, isocyanates, zirconates, aluminozirconates, zirconyl methacrylate, titanates, and phosphonates.

65. (previously presented) The functionalized zirconium oxide particles of claim 60 wherein the organofunctional coupling agent comprises a functionality selected from the group consisting of mono-, di-, and tri-functional silanes, isocyanates, zirconates, aluminozirconates, zirconyl methacrylate, titanates, and phosphonates.

66. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein the organofunctional groups are hydrolyzable zirconates having the following general structure:

$$R^1\text{-O-}\ Zr\text{-}(OR^2)_3$$

wherein

R^1 is selected from the group consisting of hydrolyzable alkyl groups and hydrolyzable alkenyl groups having 1 or more carbon atoms; and

R^2 is selected from the group consisting of copolymerizable alkenyl substituents containing 2 or more carbon atoms.

67. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein the organofunctional groups are hydrolyzable zirconates having the following general structure:

$$R^1\text{-O-}\ Zr\text{-}(OR^2)_3$$

wherein

R^1 is selected from the group consisting of hydrolyzable alkyl groups and hydrolyzable alkenyl groups having 1 or more carbon atoms; and

R^2 is selected from the group consisting of copolymerizable alkenyl substituents containing 2 or more carbon atoms.

68. (previously presented) The functionalized zirconium oxide particles of claim 6 wherein the organofunctional groups are hydrolyzable zirconates having the following general structure:

$$R^1\text{-O-}Zr\text{-}(OR^2)_3$$

wherein

R^1 is selected from the group consisting of hydrolyzable alkyl groups and hydrolyzable alkenyl groups having 1 or more carbon atoms; and

R^2 is selected from the group consisting of copolymerizable alkenyl substituents containing 2 or more carbon atoms.

69. (previously presented) The functionalized zirconium oxide particles of claim 17 wherein the organofunctional groups are hydrolyzable zirconates having the following general structure:

$$R^1\text{-O-}Zr\text{-}(OR^2)_3$$

wherein

R^1 is selected from the group consisting of hydrolyzable alkyl groups and hydrolyzable alkenyl groups having 1 or more carbon atoms; and

R^2 is selected from the group consisting of copolymerizable alkenyl substituents containing 2 or more carbon atoms.

70. (previously presented) The functionalized zirconium oxide particles of claim 18 wherein the organofunctional groups are hydrolyzable zirconates having the following general structure:

$$R^1\text{-O-}\ Zr\text{-}(OR^2)_3$$

wherein

R^1 is selected from the group consisting of hydrolyzable alkyl groups and hydrolyzable alkenyl groups having 1 or more carbon atoms; and

R^2 is selected from the group consisting of copolymerizable alkenyl substituents containing 2 or more carbon atoms.

71. (previously presented) The functionalized zirconium oxide particles of claim 66 wherein R^1 is selected from the group consisting of alkyl groups having from about 1 to about 9 carbon atoms.

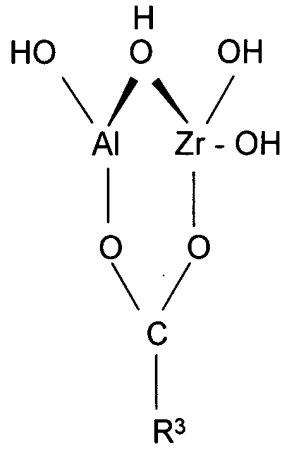
72. (previously presented) The functionalized zirconium oxide particles of claim 67 wherein R^1 is selected from the group consisting of alkyl groups having from about 1 to about 9 carbon atoms.

73. (previously presented) The functionalized zirconium oxide particles of claim 68 wherein R^1 is selected from the group consisting of alkyl groups having from about 1 to about 9 carbon atoms.

74. (previously presented) The functionalized zirconium oxide particles of claim 69 wherein R^1 is selected from the group consisting of alkyl groups having from about 1 to about 9 carbon atoms.

75. (previously presented) The functionalized zirconium oxide particles of claim 70 wherein R^1 is selected from the group consisting of alkyl groups having from about 1 to about 9 carbon atoms.

76. (Currently amended, withdrawal contested) The functionalized zirconium oxide particles of claim 2 wherein the organofunctional coupling agents comprise ~~moeities~~ moieties selected from the group consisting of neopentyl (diallyl) oxy trimethacryl zirconates, neopentyl (diallyl) oxy triacryl zirconates, and aluminozirconates having the following general structure:

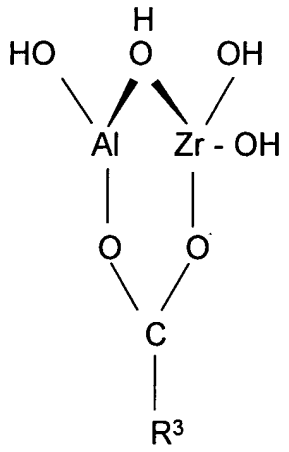


wherein R^3 is selected from the group consisting of copolymerizable alkenyl groups and carboxyfunctional substituents containing 1 or more carbon atoms.

77. (previously presented, withdrawal contested) The functionalized metal oxide particles of claim 5 wherein the organofunctional coupling agents comprise moieties selected from the group consisting of neopentyl (diallyl) oxy trimethacryl zirconates,

neopentyl (diallyl) oxy triacryl zirconates, and aluminozirconates having the following general structure: wherein R^3 is selected from the group consisting of copolymerizable alkenyl groups and carboxyfunctional substituents containing 1 or more carbon atoms.

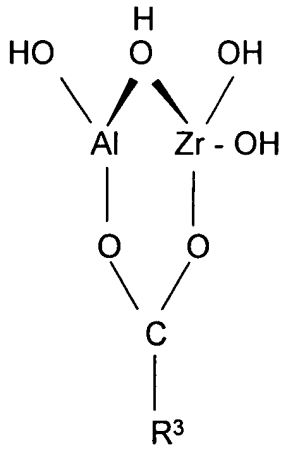
78. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claims 6 wherein the organofunctional coupling agents comprise moieties selected from the group consisting of neopentyl (diallyl) oxy trimethacryl zirconates, neopentyl (diallyl) oxy triacryl zirconates, and aluminozirconates having the following general structure:



wherein R^3 is selected from the group consisting of copolymerizable alkenyl groups and carboxyfunctional substituents containing 1 or more carbon atoms.

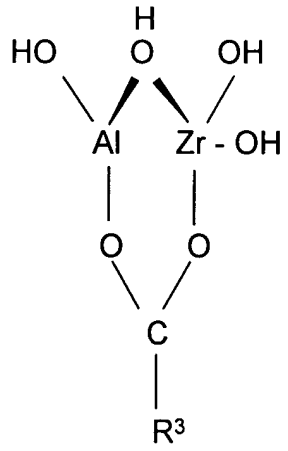
79. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 17 wherein the organofunctional coupling agent comprise moieties selected from the group consisting of neopentyl (diallyl) oxy trimethacryl zirconates,

neopentyl (diallyl) oxy triacryl zirconates, and aluminozirconates having the following general structure:



wherein R^3 is selected from the group consisting of copolymerizable alkenyl groups and carboxyfunctional substituents containing 1 or more carbon atoms.

80. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 18 wherein the organofunctional coupling agents comprise moieties selected from the group consisting of neopentyl (diallyl) oxy trimethacryl zirconates, neopentyl (diallyl) oxy triacryl zirconates, and aluminozirconates having the following general structure:



wherein R^3 is selected from the group consisting of copolymerizable alkenyl groups and carboxyfunctional substituents containing 1 or more carbon atoms.

81. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 2 wherein said organofunctional coupling agents are methacryloxy aluminozirconates.

82. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 5 wherein said organofunctional coupling agents are methacryloxy aluminozirconates.

83. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 6 wherein said organofunctional coupling agents are methacryloxy aluminozirconates.

84. (previously presented, withdrawal contested) The functionalized zirconium metal oxide particles of claim 17 wherein said organofunctional coupling agents are methacryloxy aluminozirconates.

85. (previously presented, withdrawal contested) The functionalized zirconium oxide particles of claim 18 wherein said organofunctional coupling agents are methacryloxy aluminozirconates.

86. (previously presented) Functionalized zirconium oxide particles comprising:

surfaces comprising a total quantity of hydroxyl groups comprising a complexed fraction of hydroxyl groups comprising a reactive portion of hydroxyl groups and a less reactive portion of hydroxyl groups;

said reactive portion of hydroxyl groups being complexed with functionalities selected from the group consisting of functionalities with high steric hindrance, functionalities with low steric hindrance, and a combination thereof;

said less reactive portion of hydroxyl groups being complexed with said groups having a low steric hindrance;

wherein one or more of said functionalities with high steric hindrance and said functionalities with low steric hindrance is bound to the oxide surface via an ester linkage to a phosphonate group.

87. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein one or more of said organofunctional coupling agent and said mobile adhesion promoter is bound to the oxide surface via an ester linkage to a phosphonate group.

88. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein one or more of said organofunctional coupling agents and said mobile adhesion promoter is bound to the oxide surface via an ester linkage to a phosphonate group.

89. (previously presented) The functionalized zirconium oxide particles of claim 6 wherein one or more of said organofunctional coupling agents and said less reactive functionalities is bound to the oxide surface via an ester linkage to a phosphonate group.

90. (previously presented) The functionalized zirconium oxide particles of claim 17 wherein one or more of said organofunctional coupling agents and said less reactive functionalities is bound to the oxide surface via an ester linkage to a phosphonate group.

91. (previously presented) The functionalized zirconium oxide particles of claim 18 wherein one or more of said organofunctional coupling agents and said less reactive functionalities is bound to the oxide surface via an ester linkage to a phosphonate group.

92. (previously presented) The functionalized zirconium oxide particles of claim 86 wherein said phosphonate group comprises a silyl ester which may or may not comprise a polymerizable group.

93. (previously presented) The functionalized zirconium oxide particles of claim 87 wherein said phosphonate group comprises a silyl ester which may or may not comprise a polymerizable group.

94. (previously presented) The functionalized zirconium oxide particles of claim 88 wherein said phosphonate group comprises a silyl ester which may or may not comprise a polymerizable group.

95. (previously presented) The functionalized zirconium oxide particles of claim 89 wherein said phosphonate group comprises a silyl ester which may or may not comprise a polymerizable group.

96. (previously presented) The functionalized zirconium oxide particles of claim 90 wherein the phosphonate group comprises a silyl ester which may or may not comprise a polymerizable group.

97. (previously presented) The functionalized zirconium oxide particles of claim 91 wherein the phosphonate group comprises a silyl ester which may or may not comprise a polymerizable group.

98. (previously presented) The functionalized zirconium oxide particles of claim 1 wherein the functionality with low steric hindrance is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

99. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

100. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

101. (previously presented) The functionalized zirconium oxide particles of claim 6 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

102. (previously presented) The functionalized zirconium oxide particles of claim 17 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

103. (previously presented) The functionalized zirconium oxide particles of claim 18 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

104. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein the mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

105. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein the mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

106. (previously presented) The zirconium oxide particles of claim 6 wherein the mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

107. (previously presented) The zirconium oxide particles of claim 17 wherein the mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

108. (previously presented) The zirconium oxide particles of claim 18 wherein the mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

109. (previously presented) The zirconium oxide particles of claim 1 having an average diameter of from about 10 to about 150 nanometers.

110. (previously presented) The zirconium oxide particles of claim 2 having an average diameter of from about 10 to about 150 nanometers.

111. (previously presented) The zirconium oxide particles of claim 3 having an average diameter of from about 10 to about 150 nanometers.

112. (previously presented) The zirconium oxide particles of claim 4 having an average diameter of from about 10 to about 150 nanometers.

113. (previously presented, withdrawal contested) A composition comprising the zirconium oxide particles of claim 2 and a matrix comprising at least one monomer comprising a polymerizable group which is polymerizable with the organofunctional coupling agent.

114. (previously presented, withdrawal contested) A composition comprising the zirconium oxide particles of claim 5 and a matrix comprising at least one monomer comprising a polymerizable group which is polymerizable with the organofunctional coupling agent.

115. (previously presented, withdrawal contested) A composition comprising the zirconium oxide particles of claim 6 and a matrix comprising at least one monomer comprising a polymerizable group which is polymerizable with the organofunctional coupling agent.

116. (previously presented, withdrawal contested) A composition comprising the zirconium oxide particles of claim 18 and a matrix comprising at least one monomer

comprising a polymerizable group which is polymerizable with the organofunctional coupling agent.

117. (previously presented, withdrawal contested) A composite comprising the composition of claim 113 wherein said polymerizable group and said organofunctional coupling agent are copolymerized.

118. (previously presented, withdrawal contested) A composite comprising the composition of claim 114 wherein said polymerizable group and said organofunctional coupling agent are copolymerized.

119. (previously presented, withdrawal contested) A composite comprising the composition of claim 115 wherein said polymerizable group and said organofunctional coupling agent are copolymerized.

120. (previously presented, withdrawal contested) A composite comprising the composition of claim 116 wherein said polymerizable group and said organofunctional coupling agent are copolymerized.

121. (previously presented, withdrawal contested) The composition of claim 113 comprising a dental restorative composition.

122. (previously presented, withdrawal contested) The composition of claim 117 comprising a dental restorative composition.

123. (previously presented, withdrawal contested) The composition of claim 113 comprising a prototyping composition.

124. (previously presented, withdrawal contested) The composition of claim 117 comprising a prototyping composition.

125-127. (Canceled)

128. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein the organofunctional coupling agents comprise moieties selected from the group consisting of neopentyl (diallyl) oxy trimethyacryl zirconates and neopentyl (diallyl) oxy triacryl zirconates.

129. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein the organofunctional coupling agents comprise moieties selected from the group consisting of neopentyl (diallyl) oxy trimethyacryl zirconates and neopentyl (diallyl) oxy triacryl zirconates.

130. (previously presented) The functionalized zirconium oxide particles of claim 66 wherein the organofunctional coupling agents comprise moieties selected from the group consisting of neopentyl (diallyl) oxy trimethyacryl zirconates and neopentyl (diallyl) oxy triacryl zirconates.

131. (previously presented) The functionalized zirconium oxide particles of claim 70 wherein the organofunctional coupling agents comprise moieties selected from the group consisting of neopentyl (diallyl) oxy trimethyacryl zirconates and neopentyl (diallyl) oxy triacryl zirconates.

132. (Currently amended) The functionalized zirconium oxide particles of claim 5 wherein the organofunctional groups comprise ~~moeities~~ moieties selected from the group consisting of neopentyl (diallyl) oxy trimethyacryl zirconates and neopentyl (diallyl) oxy triacryl zirconates.

133. (Currently amended) The functionalized zirconium oxide particles of claim 8 wherein the organofunctional groups comprise moieties ~~moeities~~ selected from the group consisting of neopentyl (diallyl) oxy trimethyacryl zirconates and neopentyl (diallyl) oxy triacryl zirconates.

134. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

135. (original) The functionalized metal oxide particles of claim 66 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

136. (original) The functionalized metal oxide particles of claim 70 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

137. (original) The functionalized metal oxide particles of claim 71 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

138. (original) The functionalized metal oxide particles of claim 75 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

139. (original) The functionalized metal oxide particles of claim 130 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

140. (original) The functionalized metal oxide particles of claim 131 wherein the mobile adhesion promoter is selected from the group consisting of silanes, phosphonates, phosphates, chelating agents, fatty acids, fatty alcohols, and ester linked fatty acids.

141. (original) The metal oxide particles of claim 2 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

142. (previously presented)The metal oxide particles of claim 8 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

143. (previously presented)The metal oxide particles of claim 10 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

144. (original) The metal oxide particles of claim 66 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

145. (original) The metal oxide particles of claim 70 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

146. (original) The metal oxide particles of claim 71 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

147. (original) The metal oxide particles of claim 75 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

148. (previously presented)The metal oxide particles of claim 5 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

149. (original) The metal oxide particles of claim 129 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

150. (original) The metal oxide particles of claim 130 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

151. (original) The metal oxide particles of claim 131 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

152. (previously presented)The metal oxide particles of claim 6 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

153. (previously presented) The metal oxide particles of claim 8 wherein said mobile adhesion promoter comprises dimethyl ethoxy vinyl silane.

154. (previously presented) The functionalized zirconium oxide particles of claim 2 wherein said complexed fraction of hydroxyl groups is about 50% or more of said total quantity of hydroxyl groups.

155. (previously presented) The functionalized zirconium oxide particles of claim 5 wherein said complexed fraction of hydroxyl groups is about 50% or more of said total quantity of hydroxyl groups.

156. (previously presented) The functionalized zirconium oxide particles of claim 6 wherein said complexed fraction of hydroxyl groups is about 50% or more of said total quantity of hydroxyl groups.

157. (previously presented) The functionalized zirconium oxide particles of claim 8 wherein said complexed fraction of hydroxyl groups is about 50% or more of said total quantity of hydroxyl groups.

158. (previously presented) The functionalized zirconium oxide particles of claim 76 wherein said complexed fraction of hydroxyl groups is about 50% or more of said total quantity of hydroxyl groups.

159. (previously presented) The functionalized zirconium oxide particles of claim 149 wherein said complexed fraction of hydroxyl groups is about 50% or more of said total quantity of hydroxyl groups.